# Newton’s Law of Cooling Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Please show all work on E-2 paper! Due Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. A bowl of porridge at (too hot) is placed on a 70 room. One minute later the porridge has cooled to 180. When will the temperature be 120 (just right)?
2. A small bowl of porridge served at 200 cools to 160 in one minute. What temperature (too cold) will this porridge be when the bowl of exercise 1 has reached 120 (just right).
3. A cold drink is poured out at 50. After 2 minutes of sitting in a 70 room, the temperature has risen to 56. Find the drink’s temperature at any time *t*.
4. For the cold drink exercise in problem 3, what will the temperature be after 10 min? When will the drink have warmed to 66?
5. At 10:07 pm you find a secret agent murdered. Next to him is a martini that got shaken before the secret agent could stir it. Room temperature is 70. The martini warms from 61 to 61 in the two minutes from 10:07 P.M. to 10:09 P.M. If the secret agents martinis are always served at 40, what was the time of death?
6. Twenty minutes after being served a fast-food coffee it is still too hot to drink at 160. Two minutes later the temperature has dropped to 158. Your friend, whose coffee is also too hot to drink, speculates that since the temperature is dropping an average of 1 per minute, it was served at 180. Explain what is wrong with this logic. Was the actual serving temperature hotter or cooler than 180.
7. Find the actual serving temperature in problem 6 if room temperature is 68.